Bandolier 52

What do we think?
What do we know?
What can we prove?

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Adverse thoughts

A theme of this month's ***Bandolier*** is adverse effects of drugs. There is a focus on NSAID adverse effects, asked for by several readers, and we continue that theme with a report on adverse drug reactions in the United States which shows that it could be the fourth to the sixth leading cause of death.

This is not intended to be negative. Medicines, indeed, interventions of all kinds, have brought and continue to bring enormous benefits. But occasionally they also cause harm. Because serious harm occurs infrequently it is difficult to measure, and because it is difficult to measure, perhaps it gets less attention than it merits. So no apologies for concentrating on it for one issue.

Bandolier Conference

The arrangements for this conference on "Telemedicine: role in primary care" at the Eynsham Hall Conference Centre on July 10/11 are now in place. We have assembled a great panel of speakers with a wide range of experience of the actual and planned potential of telemedicine and telecare.

On Friday afternoon there will be sessions on 'the vision and the technology' and 'home monitoring'. After dinner we hope to demonstrate different communication modes and the latest developments from the Centre for Evidence-based Medicine's bedside diagnosis decision support system. On Saturday morning the sessions will be on 'telemedicine in community care' and 'the evidence and the economics'.

We believe this is going to be a lively meeting discussing some exciting possibilities for a very different health service in the future. Those of you who have been to previous meetings will know that Eynsham Hall is a very pleasant customised conference centre with swimming pool, squash court, gym, croquet and tennis courts and a bar.

The subsidised fee for NHS and University staff will be £140 for resident delegates and £90 without accommodation. For delegates from industry the fees are £300 and £200 respectively. For more details and/or an application form please contact Eileen Neail by fax on 01865 226978, or by email to eileen.neail@pru.ox.ac.uk.

What do you want in *Bandolier*?

Keep telling us what you want to see in ***Bandolier***. You stimulate us into seeking evidence in dusty corners into which we would otherwise rarely peer. So more thoughts from readers, both from the paper edition (now going as far afield as Fiji and Papua New Guinea - welcome), and from the electronic edition, which has 6000 visits to ***Bandolier*** pages a day.

Telemedicine: Role in Primary Care

The Vision and the Technology

- The global potential of Telecare
- Impact of TM and TC on healthcare
- Telemedicine in the NHS: the Millenium and beyond
- Biosensors; the future
- Optimal delivery of Information

Home Monitoring

- The intelligent home. BT / Anchor Housing Project
- Home telecare: an overview
- The virtual nursing home
- Personal physiological monitoring

Demonstrations of Different Communication Modes and The CEBM (Sackett) information wagon; bedside diagnosis decision support.

Community Care

- GPs perception of the need
- Overview of Welsh Experience of Telemedicine
- Community-based ante-natal care

The Evidence and the Economics

- Overview of effectiveness to date
- Results of Systematic Review of Telemedicine
- RCTs and the economic evaluation of Telemedicine
- What evidence do we need to accept Telecare?

Final comments Where next?

In this issue

NSAID FOCUS

A number of ***Bandolier***'s readers have asked for information on the safety of the various NSAIDs available orally. This probably stems from uncertainty about when to prescribe, or perhaps when not to prescribe, oral NSAIDs alone or together with mucosoprotective agents.

Use of analgesics

One of the problems with analgesics is that people use them all the time because they are available without prescription. An insight into the use of both prescription and nonprescription analgesics in Sweden is provided by a recently published paper looking at data collected in 1988/9 [1].

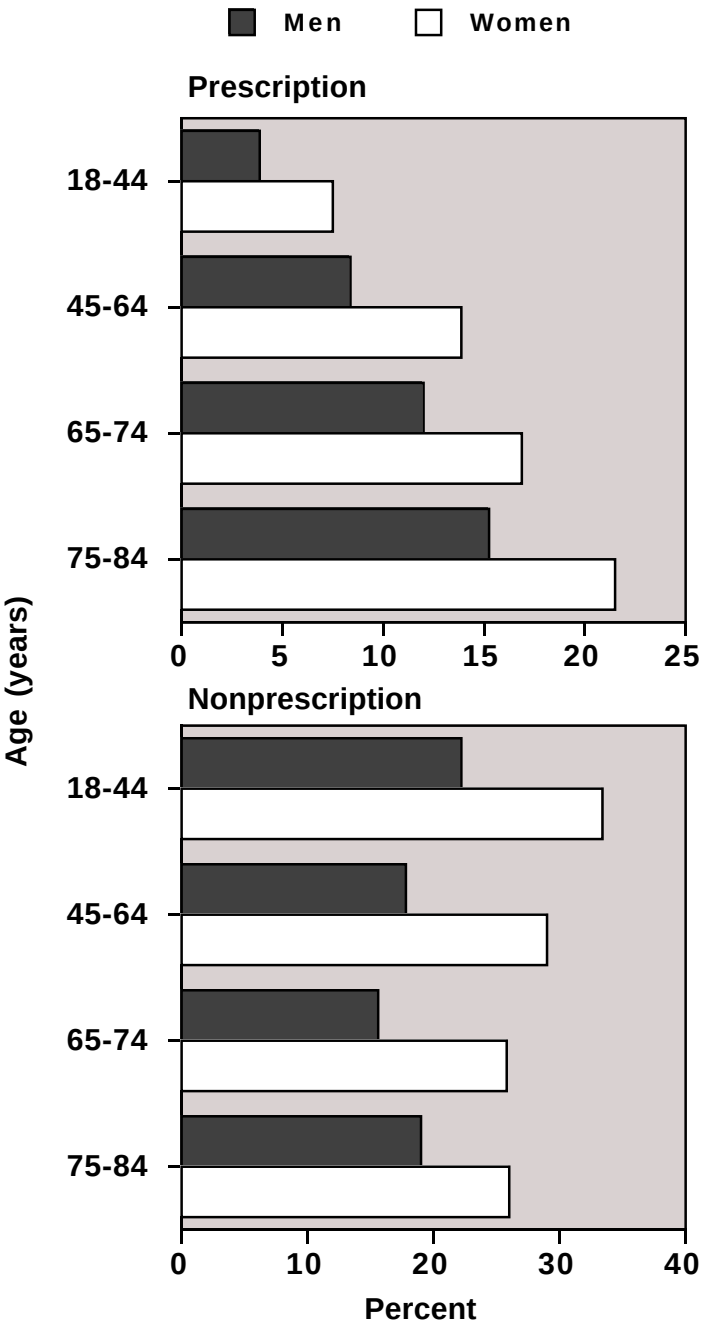
The survey was based on a random sample of the Swedish population aged 16 years and older, who were asked specific questions relating to analgesic use. The participation rate was 79%, and information was available from just under 12,000 people.

Results of the survey

In a report full of detail, the following picture emerges. Overall, 7% of men and 12% of women use prescription analgesics, while 20% and 30% use non-prescription analgesics. Use of prescription analgesics increases with age in men and women (Figure 1), but use of non-prescription analgesics is similar in all age groups.

Deeper analysis showed some fairly obvious relationships. For instance, headache and musculoskeletal pain were associated with increased use of analgesics, as were high levels of physical work stress, poor physical fitness and perceived poor health. In the previous 12 months, 13% of men and 20% of women had visited alternative therapists.

Figure 1: Prescription and nonprescription analgesic use in men and women in Sweden



Prescribers' knowledge of NSAIDs

Medicine is a complex business. Audit can inform us on many of the activities in medicine, but occasionally more direct methods may be tried in order to assess the appropriateness of decision-making processes. To evaluate the extent to which NSAIDs are prescribed unnecessarily and how well NSAID-related adverse effects are diagnosed, a rather ingenious study was undertaken in Montreal [2].

Method

Two clinical scenarios were devised. One was of a 67 year old person with a history of stiffness and pain in the right hip that radiated to the groin, taking 2.6 grams of paracetamol/day, plus some paracetamol/codeine combination, and with peptic ulcer disease and intolerance to aspirin. The other was a 67 year old with three week history of intermittent mid-epigastric pain, history of peptic ulcer, history of right hip osteoarthritis, and taking naproxen 1 g daily, plus ibuprofen in the past week.

Two men and two women were trained for each case to present the essential features (much more detail available than that given above), as well as to record details of visits to a physician using a structured questionnaire. The idea was to present standardised patients for clinicians to make diagnosis and management decisions.

Invites to participate were sent to 34 GPs in a hospital-based family medicine residency programme, 32 family medicine residents in a program at McGill University, 29 internal medicine residents in a hospital-based teaching programme and a random sample of 82 GPs. Each physician was to see one to four patients over eight months. They were invited to send reply-paid cards if they thought they had identified the standardised patients.

Eight physicians, representing different disciplines, and taking into account published guidelines for prescribing, came to a consensus about what would constitute optimal, acceptable, suboptimal and unsafe management decisions for each case (Table 1).

Table 1: Consensus on precribing decisions for standardised patients

Quality of management	Case 1: Episodic hip pain	Case 2: NSAID-related gastropathy
Optimal	Increase paracetamol to 4 g/day, or nonpharmacological therapy	Stop therapy with both NSAIDs
Acceptable	Prescribe paracetamol and codeine (≤15 mg) or codeine (≤15 mg 3-4 times a day)	Stop therapy with both NSAIDs and prescribe antiulcer therapy or reduce NSAID dose by at least half and prescribe antiulcer therapy
Suboptimal	Prescribe NSAID with a gastroprotective agent or codeine (>15 mg 3-4 times a day)	Reduce current NSAID dose by at least half with or without gastroprotective agent
Unsafe	Prescribe NSAID without protection	Continue with current dose of NSAIDs

Results

Most (63%) of the physicians approached agreed to participate, ranging from 40% of community-based GPs to 100% of academic affiliated GPs. There were 312 visits to 112 physicians, and in 36 cases (12%) the physician unblinded the study by guessing that s/he was seeing a standardised patient (real patients were suspected only twice).

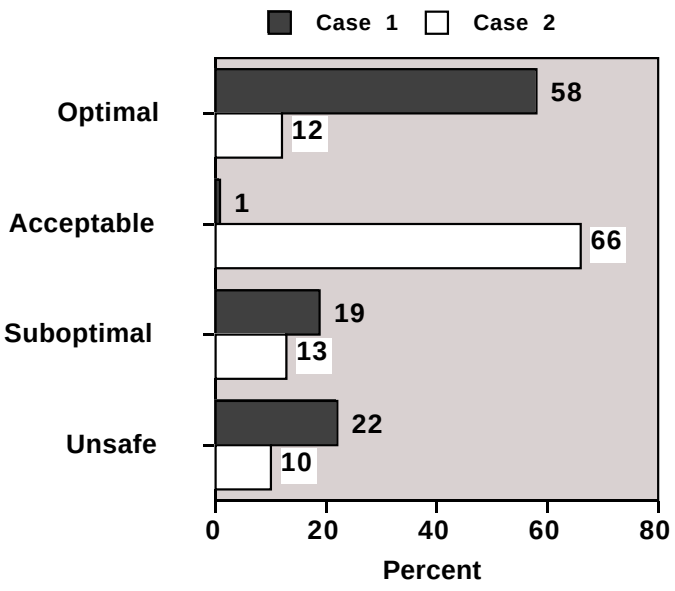
Case 1

In 139 blinded visits, osteoarthritis of the hip was the diagnosis made 90% of the time, with optimal/acceptable management decisions being taken in 58% of visits. Management decisions judged to be unsafe were made in 22% of cases (Figure 2).

Case 2

In 137 blinded visits, NSAID-related gastropathy was diagnosed 93% of the time, with optimal/acceptable management decisions being taken in 78% of visits. Management decisions judged to be unsafe were made in 10% of cases (Figure 2).

Figure 2: Physicians' treatment decisions



In both cases, longer visit times contributed significantly to the likelihood that a relevant history would be obtained, which, in turn, contributed to the likelihood that treatment would be appropriate.

How big is the problem?

NSAIDs cause ulcers in some people. Some of those who have ulcers also have symptoms, which include bleeding. In some of those who have bleeding ulcers, the bleeding is sufficiently severe to result in hospital admission, and may cause death. This is a fairly simplified version of events, and many of the papers in this field have as many as 10 different classifications of upper gastrointestinal complaints from which to classify an event.

Clearly, the important issue is the overall incidence of severe adverse events, including hospital admission and death, however much we might like information about the risk of any particular event happening to any particular patient. The variables are drug and dose, duration of exposure, and patient characteristics.

Most of the publications referenced in this focus have reams about the scale of the problem of NSAID-related GI problems. They make good reading, and would repay the effort if someone were to pull the information together. But for those with little time, a flavour is given in Table 2. Other widely quoted factlets are that 1-3% of NSAID users develop GI bleeding, and 26% will be prescribed anti-ulcer therapy, that in Alberta, NSAID use was the reason for half the antiulcer prescribing for elderly persons, and that surveys show many prescribers lack awareness of the adverse events associated with NSAIDs.

Who needs protection?

We know that NSAIDs cause ulcers. The average risks for gastric ulcers were 3.6% and 6.8% with <2 weeks and >4 weeks use of NSAIDs, and for duodenal ulcers the average risks were 3.0% and 4.0% with <2 weeks and >4 weeks use respectively [3] (***Bandolier*** 39). The risk of developing serious GI injury was higher in a large clinical trial [4] which used a multiple linear regression model with 18 potential risk factors. It showed that risk factors for serious complications with oral NSAIDs were age 75 years or more, history of peptic ulcer, history of gastrointestinal bleeding and history of heart disease (***Bandolier*** 25).

Table 2: NSAID-related deaths and admissions to hospital

Event	UK	USA	Canada
Annual NSAID prescriptions	20 million	70 million	10 million
NSAID-related deaths		7,600	365
NSAID-related admissions	3500-12,000	76,000	3,900

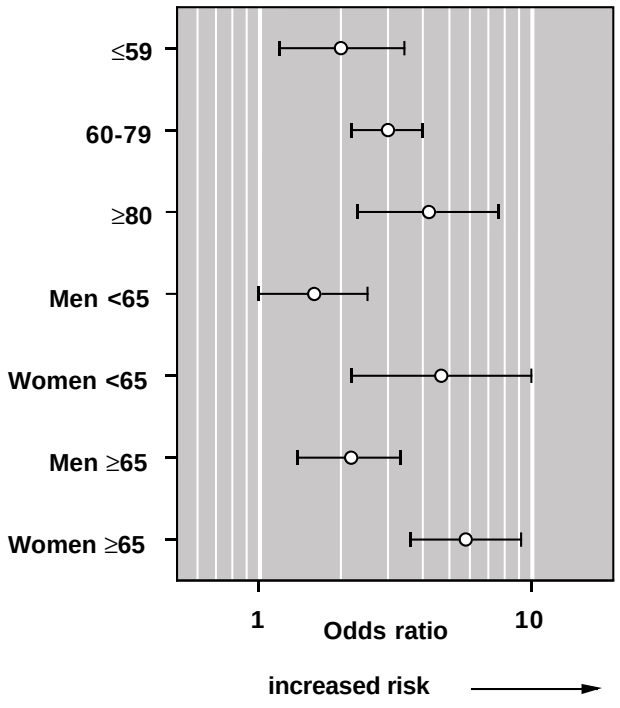
The model predicted that for patients with none of the four major risk factors, the one-year risk of a complication was 0.8%, for patients with any single risk factor it was 2%, and for patients with all four factors it was 18%. With combinations of three of the factors, the one year risk was 8 - 10%.

Age and sex were also highlighted as important determinants of risk of serious GI complications with NSAID use in a large case-control study [5]. Figure 3 shows the increasing odds ratios with age for all patients (60% men), and the increased risk for women over men.

Are some NSAIDs safer?

Two reports indicate that some NSAIDs are associated with more harm than others [6,7]. One [6] is a meta-analysis of case-control studies, while the other is a cohort study of about 130,000 people over 50 years in Scotland. They give somewhat different magnitudes of difference, but the direction is similar in both (Table 3). There are differences, but the reasons are complicated, not least by the fact that few studies are able to take account of non-prescription aspirin or NSAIDs, which, as we have seen, may be taken by 20-30% of the population [1].

Figure 3: Odds ratios for major gastrointestinal complications with NSAIDs by age and sex



Do the risks change over time?

The cohort study from Scotland suggest not [7]. The relative risk of hospital admission was similar at all times after first day of NSAID exposure.

NSAID problems - the burden

The cohort study from Scotland [7] looked at all people over 50 years during a two year period, many of whom were also taking anti-ulcer medicines. In this time, 1034 of 52,293 people (1.98%) who had at least one prescription for an NSAID (not including aspirin) had a hospital admission, compared to 1005 of 73,792 people (1.36%) who did not. These numbers suggest a number needed to harm (NNH) of 163 (95% CI 131 to 213), with a relative risk of 1.5 (1.3 to 1.6).

So over two years an extra 0.62% of over 50s using NSAIDs had a hospital admission. Given that in the Scottish population 41% of over 50s had a prescription for an NSAID, this works out at 0.41 x 0.62/2 = 0.13% of all over 50s might be admitted in any one year. This is 130 people per 100,000 population over 50 years, despite indications that antiulcer medicines were being used appropriately.

How effective are anti-ulcer treatments with NSAIDs?

In ***Bandolier*** 25, we gave the NNT for misoprostol to prevent one bleeding event compared with placebo in one year, the number-needed-to-treat as 83 (95%CI 55 - 160) in one large randomised trial. In ***Bandolier*** 39 we discussed how the NNTs would be lower for patients at higher risk.

Two further large RCTs have compared omeprazole with misoprostol, and with ranitidine and placebo.

Misoprostol, omeprazole and ranitidine

The first study [8] randomly assigned 935 patients who needed continuous NSAID therapy and who had ulcers or erosions to 20 or 40 mg omeprazole once daily, or 200 µg misoprostol four times a day. Healing over 4 to 8 weeks was assessed, and then patients with healed ulcers or erosions were randomly re-assigned to maintenance therapy of 20 mg omeprazole or misoprostol, or placebo, for six months. The second study [9] had a similar design, but with 20 and 40 mg omeprazole daily and 150 mg ranitidine twice a day in the healing phase, and randomisation of 432 patients to 20 mg omeprazole or 300 mg ranitidine a day in the maintenance phase, over six months.

Table 3: Relative risk of gastrointestinal complications with NSAIDs, relative to ibuprofen

Drug	Case-control studies [6]	Cohort study [7]
Ibuprofen	1.0	1.0
Fenoprofen	1.6 (1.0 to 2.5)	3.1 (0.7 to 13)
Aspirin	1.6 (1.3 to 2.0)	
Diclofenac	1.8 (1.4 to 2.3)	1.4 (0.7 to 2.6)
Sulindac	2.1 (1.6 to 2.7)	
Diflusinal	2.2 (1.2 to 4.1)	
Naproxen	2.2 (1.7 to 2.9)	1.4 (0.9 to 2.5)
Indomethacin	2.4 (1.9 to 3.1)	1.3 (0.7 to 2.3)
Tolmetin	3.0 (1.8 to 4.9)	
Piroxicam	3.8 (2.7 to 5.2)	2.8 (1.8 to 4.4)
Ketoprofen	4.2 (2.7 to 6.4)	1.3 (0.7 to 2.6)
Azopropazone	9.2 (2.0 to 21)	4.1 (2.5 to 6.7)

Omeprazole 20 mg was more effective than misoprostol 800 µg a day. Compared with placebo the NNT for omeprazole 20 mg over six months was 3.0 (2.3 to 4.1), while for misoprostol 800 µg compared with placebo the NNT was 5.8 (3.8 to 12).

For omeprazole 20 mg compared with misoprostol 800 µg the NNT was 6.0 (4.0 to 12). For omeprazole 20 mg compared with ranitidine 300 mg the NNT was 6.2 (4.0 to 15).

These NNTs are impressive compared with those obtained for misoprostol previously [4]. But these are different studies, and the two recent omeprazole studies [8,9] use patients with established ulcers or erosions, in which the baseline risk of an ulcer with NSAID is much higher than in the complete population. Though the population studied was not particularly old (mean late 50s), all had previous symptoms or established gastroduodenal problems (see ***Bandolier*** 39).

What about H pylori?

Both Helicobacter pylori and NSAIDs cause ulcers, so there may be some interactions. The evidence up to now has been unclear, perhaps because there are so many different things going on in epidemiological studies. A randomised trial [10] indicates that perhaps eradicating the bug in people on NSAIDs may be a good thing.

Briefly, some 200 patients who needed NSAID treatment for musculoskeletal pain were tested for H pylori. Just over half were positive, and of these H pylori positive patients 47 were randomised to naproxen without eradication therapy. Another 45 were randomised to eradication therapy (which was effective in 40) before starting on naproxen (750 mg daily in all cases. Endoscopy was performed before treatment and after eight weeks.

None of the patients had an ulcer before starting naproxen. After eight weeks, 12 of 52 patients (27%) who had not had H pylori eradication, or in which it had failed had an endoscopically evident ulcer. Of 40 patients with successful eradication, only 1 (2.5%) had an ulcer. This gives an NNT of 4.1 (2.7 to 8.8) for preventing an endoscopic ulcer at eight weeks.

Now this is but one, small, RCT. The outcomes were endoscopic ulcer, not symptomatic ulcer, and the time-scale was short, but this is a significant straw in the wind. It suggests that H pylori eradication might be considered for those at highest risk and who are being started on long-term NSAID therapy.

What's the bottom line?

This focus has been on some of the bad things that can happen with oral NSAIDs. It is worth remembering that NSAIDs are excellent analgesics and anti-inflammatories, and bring huge benefits to many people who need them. But the gastrointestinal consequences of long-term NSAID use are not negligible. So what can be done to minimise them?

The evidence we have is that using paracetamol as a first-line agent is sensible. It is an effective and safe analgesic. It is worth remembering that NSAIDs given by topical routes are not associated with any of the gastrointestinal adverse effects seen with the oral route [11]. Meta-analysis has also shown them to be effective, with NNTs of about 3 in chronic conditions [12]. Thereafter the rule would seem to be to use ibuprofen for preference, at the lowest effective dose, and with mucosoprotective agents for those at highest risk of developing severe adverse gastrointestinal effects.

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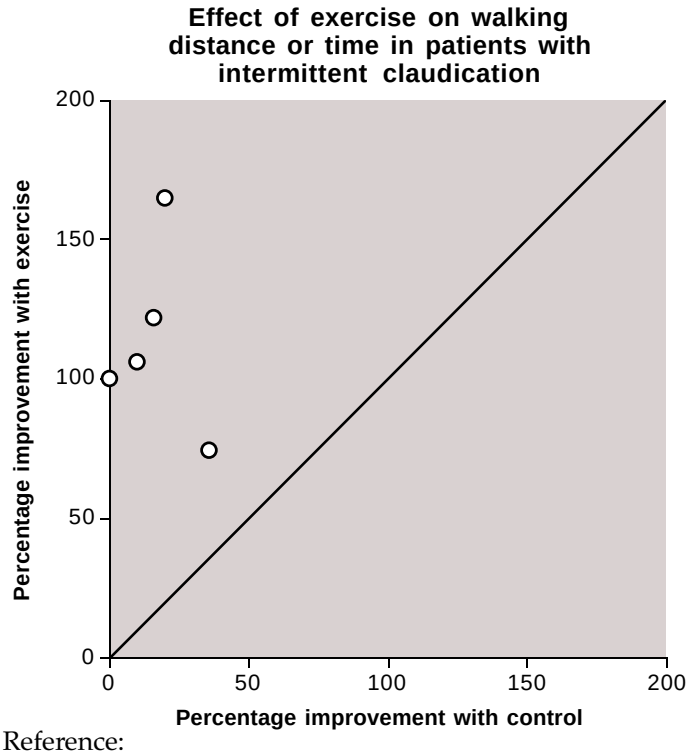

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1 JW Brandsma, BG Robeer, S van der Heuvel et al. The effect of exercises on walking distance of patients with intermittent claudication: A study of randomised clinical trials. Physical Therapy 1998 78: 278-88.
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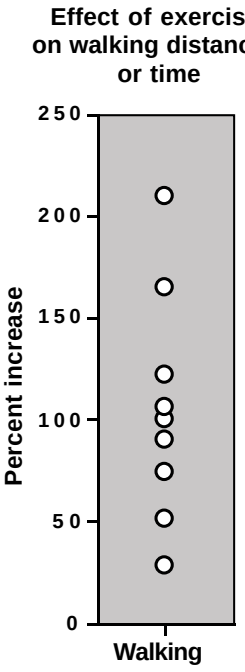
EXERCISE AND INTERMITTENT CLAUDICATION

Intermittent claudication - pain, tension and weakness on walking which intensifies until walking becomes impossible, but disappears on resting - is estimated to affect 2% of people over 65 years. Does exercise help? A systematic review of randomised trials [1] suggests that it does.

Review

The review had a superb searching system, including a specialist Dutch database of non-MEDLINE physical therapy trials. Ten randomised trials investigated the effect of exercises on the walking distance of patients with intermittent claudication due to peripheral vascular disease of the lower limbs. Five had an untreated control group, and in the other studies, the other experimental groups received a different intervention such as surgery. Nine of the ten studies had one group who used walking exercises.

The exercise programs varied in intensity, duration and content, but were all carried out at an institution. Maximum pain-free walking distance or time on a treadmill was used as an outcome measure, but since the treadmill settings were all different, percentage changes are the best standardised way of comparing studies, and no NNTs are possible.



Results

All 10 studies unequivocally demonstrated that participation in a standardised exercise program improved pain-free walking distance or time of patients with IC. For the five studies with untreated controls the L'Abbé plot shows the percentage changes in treadmill (time, distance, slope and velocity were all different).

Improvement of walking distance ranged in nine study groups using walking exercises from 28% to 210% (unweighted mean 105%). The two studies with the smallest improvements were either of short duration or low intensity.

Comment

These were small trials, with groups sizes of seven to 25 patients. But results were consistent, and the review shows that walking exercises are an effective conservative intervention. We are given little detail about the exact exercises and the duration of the programs, so the results of this review will not be easy to put into practice. According to this and another review [2] (which looked at non-randomised studies as well), patients should be encouraged to exercise at least 30 minutes a session, three times a week for at least 6 months.

Adverse drug reactions

In ***Bandolier*** 28 we highlighted a report on adverse drug reactions. That report has now been included with 38 others in a meticulous meta-analysis of adverse drug reactions both in US hospital inpatients and those patients admitted with an adverse drug reaction [1].

Search

The searching strategy was heroic, and included examination of a number of electronic databases together with postal questionnaires to researchers. Studies were restricted to US hospitals, since the bulk of information was from that country. The methods and definitions are meticulously laid out, allowing those who are interested in the figures to follow all the manipulations.

Outcome

The outcome the researchers used was the WHO definition: any noxious, unintended, and undesired effect of a drug, which occurs at doses used in humans for prophylaxis, diagnosis, or therapy. This excludes therapeutic failures, intentional or accidental poisoning or drug abuse, and adverse effects due to errors in administration or compliance. Not everyone likes this definition (see ***Bandolier*** 30), but it was the most common in the reports found.

A serious ADR was defined as one that requires hospital admission, prolongs hospital stay, is permanently disabling, or results in death. Serious ADRs therefore include fatal ADRs, which were also analysed separately.

Results

The main results (based on 33 million US hospital admissions in 1994) are shown in the Table. They show that 2.1% of in-patients experienced a serious ADR, and that 4.7% of hospital admissions were due to a serious ADR. Fatal ADRs occurred in 0.19% of in-patients and 0.13% of admissions.

Erratum

In ***Bandolier*** 50 we said that finasteride was only effective in men with prostate volumes of less than 40 mL. We misquoted ourselves (***Bandolier*** 46) and a meta-analysis. Finasteride is, of course, effective in men with prostate volumes of over 40 mL. Many thanks to the hawk-eyed readers who pointed this out.

Overall it was estimated that some 2.2 million serious ADRs would have occurred in 1994, with 106,000 of them fatal.

Although the reports covered some four decades, there was no evidence of any systematic change in the rate of serious ADRs, and the population studied was similar to that in the US hospitals. Medical wards were over-represented, though the authors did considerable work to investigate how this might have affected results using the most conservative estimates (not much). Issues like hospital setting (teaching versus non-teaching), and possible errors in compiling data in the original reports are dealt with thoroughly.

Comment

This report suggested that fatal ADRs rank from the fourth to the sixth leading cause of death in the USA after heart disease, cancer, and stroke, and similar to pulmonary disease and accidents. Costs associated with ADRs were estimated at up to $4 billion a year.

This is an important clinical issue. Those who want to think about it, and how it might be tackled, should read, digest and understand this careful and thoughtful piece of work.

Reference

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Incidence of adverse drug reactions in the USA

	Number of studies	Patients studied	Incidence of ADR (95% CI)	Estimated number (thousands, with 95% CI)
ADRs in patients while in hospital				
Serious	12	22,500	2.1 (1.9 to 2.3)	702 (635 to 770)
Fatal	10	28,900	0.19 (0.13 to 0.26)	63 (41 to 85)
ADRs in patients admitted to hospital				
Serious	21	28,000	4.7 (3.1 to 6.2)	1547 (1033 to 2060)
Fatal	6	17,800	0.13 (0.04 to 0.21)	43 (15 to 71)
Overall ADR incidence				
Serious	33	50,500	6.7 (5.2 to 8.2)	2216 (1721 to 2711)
Fatal	16	46,600	0.32 (0.23 to 0.41)	106 (76 to 137)

Correspondence on Contraceptives

Dear Bandolier

I agree that comparative failure rates are hard to come by. Trussell's 1995 paper is a good place to start, but it is entirely from a US perspective, and they are somewhat deprived of modern contraceptives. They do not have the levonorgestrel-releasing IUS, Mirena (TM), whose failure rate is only 0.2 percent - readers need to note that the progesterone-T referred to in your (his) table is the Progestasert, with a failure rate 10 times higher - nor the new GyneFIX implantable IUD, nor Persona, nor (until 1997) the Filshie clip for female sterilization.

Failure rate percentages are usually gross rates for failures among 100 women in the first year of use, with discontinuations for other reasons taken into account. Given a first-year infertility rate of 15 percent, the 1,500 out of any 10,000 who would not become pregnant are included among the successes. This applies to your example of Persona, so a claim of 94 percent effective means 600 pregnancies in the first year out of 10,000 women using the method "perfectly" (with abstinence in the "red phase" each cycle).

Trussell's paper unfortunately predates an extremely important new study on female sterilisation - I would say the most significant of the last ten years - namely Peterson et al (Am J Obstet Gynaecology, 1996; 174:1161-70). This reports the findings from the US Collaborative Review of Sterilization (CREST). The cumulative 10 year probability of pregnancy among 10,685 women followed up for 8 to 14 years was 1.8 percent, far higher than previously believed, since earlier studies were either smaller or with no more than two years follow-up. One third of the 143 sterilisation failures were extra-uterine. The Hulka spring clip and bipolar coagulation had particularly high rates at ten years of 3.6 and 2.5 percent, with the failure rate after silicone (Falope) band application similar to the mean of all the methods (1.8 percent).

The new finding of greatest interest was: whatever the failure rate of a given method at two years, one could predict from the data at least 50 percent and in some cases 100 percent more failures by 10 years. This has to mean recanalisation, rather than poor surgery, since among the late failures beyond year 2 the method had been 100 percent effective for the first 2 years. The main laparoscopic method in the UK is the Filshie clip. Its one-year failure rate is fortunately far better than the spring clip, around 0.3 percent, but the CREST study means women should now be given a life-time failure risk of about 0.5 percent or 1 in 200.

CREST is a study to change practice. For a start, vasectomy after two negative sperm counts is a whole order of magnitude more effective (better than 1 in 2000 according to Oxford's Elliot-Smith Clinic, Philp et al, BMJ 1984;289:77-79). Moreover the best intrauterine methods - not the Nova T/ Novagard, but the Copper T 380S, the new GyneFIX (TM) and Mirena (TM) - should now be seen as having entirely comparable efficacy to female sterilization, while retaining reversibility. Prevalence studies show the UK as 'the sterilization capital of Europe' with, additionally, almost the lowest rate of usage of IUDs and IUSs: a position now difficult to justify even on efficacy grounds, leave alone (with soaring divorce rates) on societal grounds!

Yours sincerely

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Medical Director, Margaret Pyke Centre

Swedish Health Technology

Some while ago ***Bandolier*** was privileged to visit the building in the Karolinska where decisions are taken on Nobel prizes in medicine. Not, alas, for anything so spectacular, but for an interesting meeting nonetheless. Good things come from Sweden, besides Nobel prizes.

One is the Swedish Council on Technology Assessment in Health Care. This organisation has been going since the late 1980s, and now spends over £2 million a year and has 24 permanent staff. It produces reports in English as well as Swedish. Some will have an abstract only in English, but increasingly the full reports are in English as well. It now has a superb Internet site (http://www.sbu.se) which allows the electronically astute to see what's available and order reports.

Recent reports include monographs on the use of neuroleptics, oestrogen treatments and on radiotherapy for cancer.

Ongoing projects include prevention of disease with antioxidants, prevention of cardiac disease by community intervention programmes (useful for the new health action zones), and the patient/doctor relationship.

A particular aspect of the work of the SBU (its Swedish acronym) is its ambassador programme. This involves having at least one ambassador in each of the 25 counties of Sweden as a messenger to provide face-to-face information about recent HTA findings at staff meetings and seminars.

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